



US008638369B2

(12) **United States Patent**
Tsai

(10) **Patent No.:** **US 8,638,369 B2**
(45) **Date of Patent:** **Jan. 28, 2014**

(54) **BACK PANEL FOR A PORTABLE
ELECTRONIC DEVICE WITH DIFFERENT
CAMERA LENS OPTIONS**

2011/0013063	A1 *	1/2011	Yamamoto et al.	348/294
2011/0134293	A1 *	6/2011	Tanaka	348/280
2012/0099015	A1 *	4/2012	Viinikanoja et al.	348/344
2012/0320340	A1 *	12/2012	Coleman, III	351/208

(75) Inventor: **Richard Tsai**, Cupertino, CA (US)

FOREIGN PATENT DOCUMENTS

(73) Assignee: **Apple Inc.**, Cupertino, CA (US)

CN	1533126	A	9/2004
CN	2666062	Y	12/2004
JP	2002-271665		9/2009

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 351 days.

* cited by examiner

(21) Appl. No.: **12/964,626**

Primary Examiner — Joseph Ustaris

Assistant Examiner — Talha Nawaz

(22) Filed: **Dec. 9, 2010**

(74) *Attorney, Agent, or Firm* — Blakely, Sokoloff, Taylor & Zafman LLP

(65) **Prior Publication Data**

US 2012/0147193 A1 Jun. 14, 2012

(51) **Int. Cl.**
H04N 5/33 (2006.01)

(52) **U.S. Cl.**
USPC **348/164**

(58) **Field of Classification Search**
USPC 348/61–164
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2005/0101348	A1	5/2005	Wang	
2005/0253923	A1 *	11/2005	Komori et al.	348/14.02
2007/0077061	A1 *	4/2007	Watanabe et al.	396/493
2007/0280677	A1 *	12/2007	Drake et al.	396/429
2008/0013322	A1 *	1/2008	Ohkawa	362/311

(57) **ABSTRACT**

A portable electronic device includes a digital imaging subsystem with a lens having an optical axis. A case encloses and supports the digital imaging subsystem in a first defined positional relationship to the case. A removable panel is coupled to the case and held in a second defined positional relationship to the case that covers the digital imaging subsystem without the removable panel being directly connected to the digital imaging subsystem. An optical component is supported by the removable panel such that the optical component is aligned with the optical axis and alters optical characteristics of the digital imaging subsystem. The device may include a power supply and an electronic control system coupled to the digital imaging subsystem and the power supply enclosed in and supported by the case. Electrical connectors may couple the power supply and the electronic control system to an electrical component on the removable panel.

22 Claims, 2 Drawing Sheets

